Shape Equations

Goals

- Write an equation to represent the relationship shown by a level pan balance.
- Use a shape to stand for the weight of an object.
- Represent balance with the equal sign.
- Understand that subtracting like numbers from each side of an equation is like removing same numbers of pounds from each pan of a balance.
- Understand that subtracting the same variable from each side of an equation is like removing the same block from each pan of a balance.
- Solve an equation to find the weight of a block.

Questions to Ask

1. What is in the right pan? (a 7-pound weight, one sphere, and a 5-pound weight)
2. What is the variable? (sphere)
3. The constants are weights. What are the constants? (5 and 7)
4. What will you use to stand for the weight of the sphere? (star)
5. What equation can you write to represent the pan balance? ($\star + \star + \star + 4 = 7 + \star + 5$, or $3\star + 4 = 7 + \star + 5$)
6. What will you do first to solve the equation? (collect ☆'s)
7. How will you do that? (subtract one ☆ from each side of the equation)
8. What will you do next? (collect constants)

f.y.i.

"To help students with the translation of objects to symbols, I had them record a symbol in each object on the pan balance before writing the equation."

Students may record equations by either listing each variable in each pan separately or as a collection. So, for example, they can write either ☆ + ☆ + ☆ + 4, or 3☆ + 4.

Solutions

1. $\star + \star + \star + 4 = 7 + \star + 5$

2. $3\star + 4 = 7 + \star + 5$
   $-\star \qquad\qquad -\star$
   $2\star + 4 = 7 \qquad\quad + 5$

3. $2\star + 4 = 12$
   $-4 \quad -4$
   $2\star \quad = \quad 8$

4. $\star = 8 \div 2$
   $\star = 4$
   4 pounds

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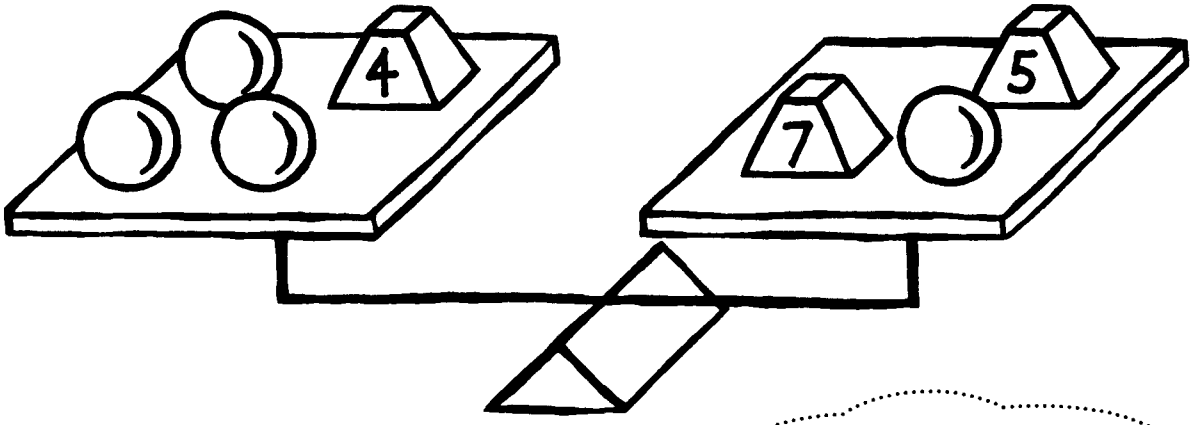
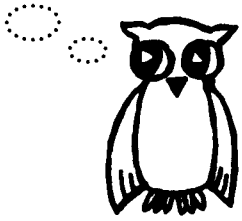
Shape Equations 1



Think: How many spheres can I remove from each pan? How many pounds can I remove from each pan?



The pans are balanced.
Same shapes have same weight.

1. Use ☆ to stand for the weight of a sphere. Write an equation for the pan balance.

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2. Subtract the same number of ☆'s from each side of the equation.

3. Collect constants. Subtract the same number from each side of the equation.

4. Find the weight of one sphere.

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